Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method of generating a cell composition containing cardiomyocytes or cardiomyocyte precursor cells from human embryonic stem (hES) cells, comprising:

a) initiating differentiation of the hES cells in suspension culture by forming embryoid bodies;

b) culturing the initiated cells so that they differentiate into areas that undergo spontaneous contraction;

c) harvesting ~~the~~ differentiated cells that demonstrate spontaneous contraction;

d) separating the harvested cells into fractions based on density; and

e) collecting ~~combining~~ the cell fractions containing cells that express cardiac troponin I (cTnI), cardiac troponin T (cTnT), or atrial natriuretic factor (ANF) from an endogenous gene;

thereby generating a cell composition ~~containing~~ comprising cardiomyocytes or cardiomyocyte precursor cells.

2. (Currently amended) The method of claim 1, wherein the embryoid bodies are plated onto a surface coated with gelatin or ~~Matrigel®~~ extracellular matrix.

3. (Previously presented) The method of claim 1, wherein the cells are differentiated in the presence of a nucleotide analog that affects DNA methylation.

4. (Previously presented) The method of claim 1, wherein the cells are differentiated in a growth environment comprising a morphogen and two or more growth factors.

5. (Original) The method of claim 4, wherein the morphogen is an activin, and the growth factors include an insulin-like growth factor and a member of the TGFβ family.

6. (Previously presented) The method of claim 1, wherein the cells are differentiated in a growth environment containing 20% serum or serum substitute.

7. (Original) The method of claim 1, wherein the harvested cells are separated by density centrifugation.

8. (Currently amended) The method of claim 1, wherein the separating comprises distributing cells in the population based on their density, and collecting cells at ~~combining cell fractions with~~ a density between ~1.05 and ~1.075 g/mL.

9. (Currently amended) The method of claim 1, further comprising culturing the collected cells ~~combined cell fractions~~ for at least 1 week in a medium containing a compound capable of forming a high energy phosphate bond, an acyl group carrier molecule, and a cardiomyocyte calcium channel modulator.

10. (Currently amended) The method of claim 9, further comprising culturing the collected cells ~~combined cell fractions~~ for at least 1 week in a medium containing creatine, carnitine, or taurine.

11.-16. (Canceled)